BIBLIOGRAPHICAL NOTICE.

Third Annual Report of the Committee of Control of the South African Central Locust Bureau. Respectfully submitted by the Committee to the several Governments supporting the Bureau. Prepared for publication and edited by Chas. P. Lounsbury, Government Entomologist, Cape of Good Hope. 8vo. Cape Town, 1909. Pp. 68.

The above-mentioned Bureau was established by the joint action of the several British colonies and territories of South Africa in 1906, after the country had been ravaged by locusts for twelve or fifteen consecutive years; and it is now supported by all the British territories, as well as by Mozambique and German South-west Africa. The Report before us deals with the locust season of 1908–9. Although a great number of species of locusts inhabit South Africa, it appears that the two principal destructive species are *Pachytylus rubricollis*, Stål, and *Cyrtacanthacris septemfasciata*, Serv., called here respectively the Brown- and the Red-winged Locusts. The former, the oldest name for which is *Pachytylus pardalinus*, Walker, is congeneric with the real *Pachytylus migratorius* of Linnæus; the latter belongs to a different section of the true Locusts or Short-horned Grasshoppers. Both species have latterly been much less destructive than formerly, owing to the energetic measures taken against them; and even on the Zambesi, where the Red-winged Locust is very destructive and less effectually combated than in the south, it is estimated that a probable loss of crops worth £250,000 was prevented this year. On one sugar-cane plantation of about 3300 acres fourteen tons of eggs were dug out. The use of poisons and the services of locust-eating birds (inclusive of stork-migrants from Europe) are also discussed, and numerous reports from various parts of South Africa are printed. The Report may be commended to the favourable attention of both naturalists and agriculturists.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

December 1st, 1909.—Prof. W. J. Sollas, LL.D., Sc.D., F.R.S., President, in the Chair.

The following communication was read:—

'The Tremadoc Slates and Associated Rocks of South-East Carnarvonshire.' By William George Fearnsides, M.A., F.G.S., Fellow of, and Lecturer in Natural Sciences at, Sidney Sussex College, Cambridge.

This paper gives the results which have been obtained by the Author in making a detailed map of the country about Portmadoc,

Tremadoc, and Criccieth in Carnarvonshire, and describes the stratigraphy of the Cambrian and Ordovician rocks there exposed. The area described includes the original type-area of the Tremadoc Slates (Sedgwick & Salter), and the paper includes a detailed account of the local development of this well-known series.

The first part of the paper is devoted to a brief summary of the results attained by former workers, and is arranged to show the various stages through which the nomenclature of the major subdivisions of the Cambrian and Ordovician Systems have evolved.

The sedimentary series are described in the order of their formation. The succession may be tabulated as follows:—

	Western or Criccieth District.	*Eastern or Tremadoc District.*
Caradoc Series.	Rhyolitic ashes and agglomerates.	
	Variable dark-grey and black shivery slates, banded, but with no distinguishable horizons.	Grey slate series, often strongly banded, with a few shelly fossils (*Trinucleus* and *Orthis*) in the upper part.
		Andesitic ashes and ashy shales.
Llandeilo Series.	Dark banded slates with intense cleavage; no fossils found.	Vesicular andesites.
		Blue-black slates containing graptolites. Zone of *Nemagraptus gracilis*.
	Earthy slates, with occasional 'tuning-fork' graptolites.	
	Shivery slates passing down into	
Arenig Series.	Flaggy grits yielding *Calymene parvifrons*.	
	Basal conglomeratic grit.	Conglomeratic grit of Ynys Towyn.

Unconformity.

Tremadoc Series.	Garth Hill Beds: Grey-blue slates with *Angelina*.	Not complete in the area studied.
	Penmorfa Beds: Flaggy mudstones and thinly-bedded slates with *Shumardia* and the Shineton fauna.	
	Portmadoc Beds: Thickly-bedded felspathic slates, with occasional *Asaphellus*.	
	Moel-y-gest Beds. Banded grey slates and mudstones; few fossils, *Acrotreta* and *Bellerophon*.	
	The *Dictyonema* Band: A constant and characteristic band of bright rusting blue-grey mudstones, with abundant *Dictyonema sociale*.	
	Tynllan Beds: Thinly-bedded rusty shales with some hard grey mudstone bands, containing *Niobe* and *Psilocephalus*. (*Symphysurus*.)	

Dolgelly Series.	Sooty-black mudstones with *Peltura scarabæoides*. Blue-black mudstone with *Agnostus trisectus*. Black slates, with calcareous bands often crowded with *Orthis lenticularis*. Dark flaggy slates with *Parabolina spinulosa*.
Ffestiniog Series.	Grey-blue slates and flags crowded with *Lingulella davisii*. Grey flags and grauwacké with some coarser bands (1800 feet thick).
Maentwrog Series.	Rusty grey and blue slates with thin bands of felspathic grauwacké.

The folding, the cleavage, the faulting, and the jointing of the rocks are described, and an attempt is made to show some relationship between the various stress-phenomena which have produced these structures.

The great fault through Penmorfa is interpreted as a thrust-plane hading gently to the north-east. It is described as bounding two districts which are of very different structural type, and is supposed to form the lowest sole of the group of thrust-planes which follow the southern margin of the Snowdonian mountain-tract.

The well-known pisolitic iron-ore of Tremadoc is shown to follow the line of this fault, and is thought by the Author to be of the nature of a metasomatic veinstone.

Direct evidence of overthrusting has been got from a study of the graptolite-bearing Llandeilo rocks of Tyldyn-diewm, which have been exposed in two artificial trenches dug for the purpose; and the distribution of the andesitic volcanic series in lines of detached lenticles among the Grey Slates is described as evidence of a similar reduplication of the newer rock-series of the north-eastern district on a more extended scale.

The actual lines of major thrust-planes, other than the Penmorfa Fault, have not been discovered; but, from the broad-spreading character of the sills of gabbroid dolerite, the Author infers that these have come in along the thrust-planes.

The petrographical characters of these quartziferous and hypersthene-bearing dolerites are not dealt with, but it is noted that the dolerites are (1) unaffected by cleavage and faulting; and (2) have metamorphosed rocks which were already cleaved, cut, and reduplicated by the thrust-faulting at the time of their intrusion: in this the Author joins issue with previous observers in regard to their age.

The Glacial and post-Glacial accumulations are also described in outline.